

IN THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A method for processing video image data, including a plurality of different image data types, wherein the image data types include a position group for position vertex parameters, a color group for color vertex parameters, and a texture group for texture vertex parameters, the method comprising the steps of:

providing a set of tasks to be performed on each different image data type, each task including at least one or more basic state operations operation, each basic state operation being a single arithmetic operation;

dividing the image data into a plurality of groups based on the image data type;

sorting the basic state operations from all of the image data groups based on the arithmetic operation type;

assigning each sorted basic state operation to one of a plurality of commonly used arithmetic units based on the corresponding arithmetic operation type, wherein all basic state operations of the same arithmetic operation type are assigned to the same arithmetic unit;

performing each basic state operation by the assigned arithmetic unit, the performing step being performed after the sorting and assigning steps, whereby each image data type is transformed in accordance with the corresponding provided set of tasks; and

combining the transformed image data of each group.

2. (Canceled)

3. (Previously presented) The method of claim 1 wherein the plurality of said commonly used arithmetic units includes an addition unit and a multiplication unit.

4. (Canceled)

5. (Previously presented) The method of claim 1 further comprising the step of providing a queue for each of the plurality of commonly used arithmetic units, wherein each assigned basic state operation is sent to the queue associated with its commonly used arithmetic unit.

6. (Previously presented) The method of claim 5, wherein the basic state operations of each task can be performed by different arithmetic units, the basic state operations to be performed in a predetermined sequence, the method further comprising the step of

preventing the arithmetic units from performing the basic state operations of a task out of sequence.

7. (Currently amended) An apparatus for processing video image data, including a plurality of different image data types, wherein the image data types include a position group for position vertex parameters, a color group for color vertex parameters, and a texture group for texture vertex parameters, the apparatus comprising:

means for providing a set of tasks to be performed on each different image data type, each task including at least one or more basic state operations operation, each basic state operation being a single arithmetic operation;

means for dividing the image data into a plurality of groups based on the image data type;

means for sorting the basic state operations from all of the image data groups based on the arithmetic operation type;

means for assigning each sorted basic state operation to one of a plurality of commonly used arithmetic units based on the corresponding arithmetic operation type, wherein all basic state operations of the same arithmetic operation type are assigned to the same arithmetic unit;

means for performing each basic state operation by the assigned arithmetic unit, said performing means operating after said sorting means and said assigning means, whereby each image data type is transformed in accordance with the corresponding provided set of tasks; and

means for combining the transformed image data of each group.

8. (Canceled)

9. (Previously presented) The apparatus of claim 7 wherein the plurality of said commonly used arithmetic units includes an addition unit and a multiplication unit.

10. (Canceled)

11. (Previously presented) The apparatus of claim 7 further comprising a queue for each of said commonly used arithmetic units, wherein each basic state operation is sent to the queue associated with its commonly used arithmetic unit.

12. (Previously presented) The apparatus of claim 11, wherein the basic state operations of a task are to be performed in a predetermined sequence, the apparatus further comprising means for preventing the arithmetic units from performing the basic state operations of a task out of sequence.

13. (Currently amended) An apparatus for performing video processing, the video processing including performing a set of tasks on vertex parameters, the apparatus comprising:

a scheduler having an input configured to receive the set of tasks, said scheduler arranging the vertex parameters to be processed into a plurality of groups based on in part characteristics of the vertex parameters, wherein the plurality of groups includes a position group for position vertex parameters, a color group for color vertex parameters, and a texture group for texture vertex parameters;

a sequencer for each group, said sequencer:

selecting the tasks required to process that group's parameters;

determining a set of basic state operations required to accomplish that group's tasks, wherein each basic state operation is a single arithmetic operation;

sorting the basic state operations from all of the image data groups based on the arithmetic operation type;

assigning each sorted basic state operation to be performed to one of a plurality of commonly used arithmetic units based on the corresponding arithmetic operation type, wherein all basic state operations of the same arithmetic operation type are assigned to the same arithmetic unit; and

sending each of the basic state operations of each of that group's tasks to the arithmetic unit associated with that basic state operation, said sequencer sending the basic state operations to the arithmetic unit after the basic state operations have been sorted and assigned; and

each of said commonly used arithmetic units having an input configured to receive the sent basic state operations and vertex parameters associated with the sent operations, each arithmetic unit performing the sent basic state operations on the sent vertex parameters.

14. (Canceled)

15. (Previously presented) The apparatus of claim 13 wherein said plurality of commonly used arithmetic units includes an addition unit and a multiplication unit.

16. (Canceled)

17. (Previously presented) The apparatus of claim 13 further comprising a queue for each of said commonly used arithmetic units, wherein the sent basic state operations are sent to the queue associated with its commonly used arithmetic unit.

18. (Previously presented) The apparatus of claim 17 wherein the basic state operations of a task are to be performed in a predetermined sequence and said sequencer prevents said arithmetic units from performing the basic state operations of a task out of sequence.